1. Find the extrema (absolute and local) of
   \[ f(x, y) = \arcsin |x + y| \]
   in the region \( S = \{(x, y) \in \mathbb{R}^2 : 3x^2 + 3y^2 \leq 1\} \).

2. Consider the solid of revolution obtained by rotating the curve \( x = 0, z = e^{-y} \) about the Y-axis. Let \( T \) be the portion of the solid contained between the planes \( XZ \) and \( y = 2 \). Compute
   \[ \int \int \int_T |x| \, dx \, dy \, dz. \]